

LISTING OF CLAIMS

1. (Currently amended) An electronic device which captures and accumulates variable levels of electrical energy in a soft storage means until the accumulated energy is of such a level that it can be efficiently transferred to a hard storage means, said device comprising:

- a) a source of variable and intermittent electrical energy;
- b) a first stage energy storage means suitable for capturing and accumulating the electrical energy from the source, said first energy storage means having essentially no minimum threshold voltage for accumulating energy;
- c) a second stage energy storage means, which is capable of receiving said electrical energy from said first stage energy storage means ~~a charge~~ and storing said electrical energy ~~this charge~~ for later use; and,
- d) an electronic means which senses and monitors a voltage of the energy accumulated in the first stage storage means and then activating a charge management electronics means when said voltage of said ~~there is sufficient energy in the first stage storage exceeds~~ a variable but preset voltage thereby to efficiently ~~charge~~ charging the second stage energy storage means, and wherein said preset voltage conforms to a minimum threshold for activation of said second stage energy storage means and said charge management electronics means further controls the charging current to conform to a variable but predetermined battery chemistry requirement of said second stage energy storage means.

2. (Previously presented) The device of claim 1 wherein said first stage energy storage means comprises an electrical device which exhibits capacitance or pseudo-capacitance behavior and has a low Equivalent Series Resistance (ESR).
3. (Original) The device of claim 1 further comprising a control circuit that senses an over-voltage condition in the first stage energy storage means and limits the voltage to a safe level.
4. (Original) The device of claim 1 further comprising a control circuit that senses the direction of current "into" versus "out of" the first energy stage storage means and activates the transfer of any useful energy from the first stage storage means to the second stage storage means even if the voltage in the first stage storage means is not optimal for such a transfer.
5. (Original) The device of claim 1 wherein said energy source is selected from the group consisting of photovoltaic cells, manually operated electro-magnetic mechanical generators, wind power, wave power, electric power utility mains, AC transformers, DC transformers, and combinations thereof.
6. (Original) The device of claim 1 further comprising at least two first stage energy storage means.
7. (Original) The device of claim 1 further comprising at least two second stage energy storage means.

8. (Original) The device of claim 7 wherein said charge management electronics comprises a programmable means for setting parameters used to effect said efficient charging of the second stage storage means.

9. (Original) The device of claim 8 wherein said programmable means is selected from the group consisting of programmable software code, programmable logic chips, hardware pin connectors, and combinations thereof.

10. (Original) The device of claim 8 wherein said charge management electronic means permits independent charging of at least some of said at least two second stage storage means.

11. (Currently amended) A method for capturing and accumulating variable levels of electrical energy in a first stage energy storage means until the accumulated energy is of such a level that it can be transferred to a second stage energy storage means, said method comprising:

- a) capturing and accumulating the energy into the first stage energy storage means, said first energy storage means having essentially no minimum threshold voltage for accumulating energy;
- b) sensing and monitoring a voltage of the energy accumulated in the first stage storage means; and,
- c) activating a charge management electronics means when the voltage of there is sufficient energy in the first stage storage exceeds a variable but preset voltage.

thereby to efficiently charge charging the second stage energy storage means and wherein said preset voltage conforms to a minimum threshold for activation of said second stage energy storage means and said charge management electronics means further controls the charging current to conform to a variable but predetermined battery chemistry requirement of said second stage energy storage means .

12. (Previously presented) The method of claim 11 wherein said first stage energy storage means comprises an electrical device which exhibits capacitance or pseudo-capacitance behavior and has a low Equivalent Series Resistance (ESR).

13. (Original) The method of claim 11 further comprising:
sensing an over-voltage condition in the first stage energy storage means; and, limiting the voltage to a safe level.

14. (Original) The method of claim 11 further comprising:
sensing the direction of current "into" versus "out of" the first energy stage storage means; and,
activating the transfer of any useful energy from the first stage storage means to the second stage storage means even if the voltage in the first stage storage means is not optimal for such a transfer.

15. (Original) The method of claim 11 wherein said energy source is selected from the group consisting of photovoltaic cells, manually operated electro-magnetic mechanical generators, wind power, wave power, electric power utility mains, AC transformers, DC transformers, and combinations thereof.

16. (Original) The method of claim 11 further comprising at least two first stage energy storage means.

17. (Original) The method of claim 11 further comprising at least two second stage energy storage means.

18. (Original) The method of claim 17 further comprising utilizing a programmable means for setting parameters used to effect said efficient charging of the second stage storage means.

19. (Original) The method of claim 18 wherein said programmable means is selected from the group consisting of programmable software code, programmable logic chips, hardware pin connectors, and combinations thereof.

20. (Original) The method of claim 18 wherein said charge management electronic means permits independent charging of at least some of said at least two second stage storage means.